

CITIES 2013

Modeling The Relationships Between Tourism Sustainable Factor In The Traditional Village of Pancasari

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Abstract

Tourism is the largest sector in Bali. The Tourism development in the destination centre of Bali became saturated. Thus, it is necessary to develop alternative tourism objects in rural areas, such as Village of Pancasari. Pancasari is an area of special tourism attraction and a conservation area. For that reason, it needs an integrated development in every aspect. Tourism activities in Pancasari have different characteristics compared to other regions. Rural tourism development in Pancasari is influenced by local wisdom. Recently, there are many activities of tourism which were not related to rural's life. Tourism activities could improved the welfare of local communitie. On the other hand, the tourism activities could degrade the traditional values and environment quality. Obviously, This condition can lead to a conflict among government's desire, investor interest, and local community. For instance, land use in Pancasari was more dominated by the investors. As a result, degradation of the environment quality took place. Tourism expansion in Village of Pancasari requires perceptions of experts in order to make a sustainable tourism. Sustainable tourism concept is aimed at maintaining the existence of rural's life in the tourism activities. Its approach views various aspect, such as environment, economy, social, and culture. This research tries to describe the relationship among indicators of sustainable tourism in Pancasari (e.g. economy, social, tourism, and environment). In this research, the key factor was determined by employing DEMATEL (Decision Making Trial and Evaluation Laboratory) method. The technique of data collection were questionnaire and interview. The experts were asked for their opinions and information about factor which dominately affected the concept of sustainable tourism in Pancasari as a rural tourist destination. The result of this study shows the key factor should be considered in making engagement among local government, investors, and community in Pancasari to develop a sustainable rural tourism destination. Local wisdom is a key factor which dominately affected in maintaining the existence of rural's life in the tourism's life in Pancasari

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Peer-review under responsibility of the Cities International Seminar Committee.

Keywords: Local-wisdom, Sustainable-tourism, Rural, Dematel

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1. Introduction

Tourism is the largest sector in Bali and has become a driver of country's economy. Tourism in Bali has provided a highest income for local revenue. Based on Statistical data, Bali which 65% Gross Regional Domestic Product (GRDP) was from tourism industry, such as trade, hotel services, and restaurant. Tourism development in Bali was proved by a number of tourist arrivals within in the last five years. Tourist arrivals in Bali increased countinously and it was beyond of 2,8 million tourists.

According to Buleleng regency spatial plan document, Buleleng has a special area of tourism attraction and two well known areas, such as Lovina and Batu Ampar. Moreover, Buleleng regency has 38 tourism attractions. Pancasari included as a special tourist attraction area. Pancasari is one of the most rural tourist destination in northern Bali. Pancasari has tourism attractions, such as lake, the biggest strawberry farm in Bali, has a camp and trekking area and many others. Pancasari well known as a viilage in 1920, then has become a rural tourist destination. Pancasari not only as rural tourist destination, but also as one of most traditional village in Bali which all of rural's life characteristic.

The characteristics of the countryside provides different types of activities in the village. The government wants to develop tourism in North Bali led to conflict between the government, investors, and local residents. Differences of interests between the parties resulted in 3 suboptimal utilization roong village. There is a change of the physycal environment and can change the attitude and mindset of the local comunity.. In order to avoid the conflict, there is need a engangement among experts about a factor which needed by considered to creat a sustainable tourism in Pancasari traditional village. A factor resulted by modeling relationship among factors of sustainable tourism in Pancasari as a rural tourist destinations.

2. Methods

Methodological approach for this research decide to use DEMATEL method. This chapter is consists of research framework, location of research, variables, questionnaires design, research objects, and evaluation method.

This research about "Modeling Relationships Factors of Sustainable Tourism In Traditional Village of Pancasari As Rural Tourist Destinations" located in village of Pancasari, Buleleng regency, Bali province.

2.1. Research Objects

Target object for this reserach are experts in Village of Pancasari.

2.2. Evaluation Method

DEMATEL is a sophisticated method for establishing a structural model involving causal relationships among complex factors (Gabus & Fontela, 1972, 1973). DEMATEL used by relationship among factors and finding a key factor which is influence dominately. Relationship modeling concept described by results of quisionnaire within questions to experts. The question on quisionnaire showed by comparisons between two variables. Score given by identification the influence of variables with its variable partner. DEMATEL is putting indirect relation into the cause and affect diagram, and it is an effective method to analyze the overall structure and affect factors.

This study use DEMATEL analysis with 8 sub indicator which is 28 questions or comparisons and ask to 5 experts. Value of relationship every indicator based on table as follow:

Table 1. Value of Relationship

Element / Responden	A								B							
	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H
1	1,00 0	0,25 0	0,20 0	3,00 0	0,25 0	3,00 0	3,00 0	4,00 0	4,00 0	1,00 0	0,25 0	3,00 0	2,00 0	3,00 0	1,00 0	3,00 0
2	1,00 0	0,25 0	0,20 0	3,00 0	3,00 0	2,00 0	1,00 0	2,00 0	4,00 0	1,00 0	0,25 0	4,00 0	4,00 0	3,00 0	2,00 0	3,00 0
3	1,00 0	0,20 0	0,20 0	4,00 0	4,00 0	3,00 0	3,00 0	2,00 0	5,00 0	1,00 0	0,20 0	4,00 0	4,00 0	3,00 0	3,00 0	2,00 0
4	1,00 0	0,20 0	0,20 0	3,00 0	4,00 0	2,00 0	4,00 0	2,00 0	5,00 0	1,00 0	0,25 0	4,00 0	4,00 0	3,00 0	3,00 0	3,00 0
5	1,00 0	0,25 0	0,25 0	3,00 0	4,00 0	3,00 0	3,00 0	2,00 0	4,00 0	1,00 0	0,25 0	4,00 0	3,00 0	2,00 0	1,00 0	2,00 0

Element / Responden	C								D							
	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H
1	5,00 0	4,00 0	1,00 0	4,00 0	5,00 0	3,00 0	5,00 0	2,00 0	0,33 3	0,33 3	0,25 0	1,00 0	4,00 0	3,00 0	1,00 0	2,00 0
2	0,20 0	4,00 0	1,00 0	1,00 0	3,00 0	3,00 0	4,00 0	2,00 0	0,33 3	0,25 0	1,00 0	1,00 0	0,33 3	3,00 0	1,00 0	2,00 0
3	5,00 0	5,00 0	1,00 0	3,00 0	4,00 0	2,00 0	5,00 0	1,00 0	0,25 0	0,25 0	0,33 3	1,00 0	0,25 0	0,25 0	1,00 0	1,00 0
4	5,00 0	4,00 0	1,00 0	3,00 0	3,00 0	2,00 0	5,00 0	3,00 0	0,33 3	0,25 0	0,33 3	1,00 0	0,33 3	0,33 3	1,00 0	1,00 0
5	4,00 0	4,00 0	1,00 0	2,00 0	4,00 0	3,00 0	4,00 0	4,00 0	0,33 3	0,25 0	0,50 0	1,00 0	0,33 3	0,50 0	1,00 0	0,33 3

Element / Responden	E								F							
	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H
1	4,00 0	2,00 0	0,20 0	4,00 0	1,00 0	3,00 0	3,00 0	1,00 0	0,33 3	0,33 3	0,33 3	3,00 0	0,33 3	1,00 0	0,33 3	2,00 0
2	0,33 3	0,25 0	0,33 3	3,00 0	1,00 0	4,00 0	3,00 0	0,33 3	0,50 0	0,33 3	0,33 3	0,33 3	0,25 0	1,00 0	1,00 0	0,25 0
3	0,25 0	0,25 0	0,25 0	4,00 0	1,00 0	4,00 0	3,00 0	3,00 0	0,33 3	0,33 3	0,25 0	4,00 0	4,00 0	1,00 0	3,00 0	0,33 3
4	0,25 0	0,25 0	0,33 3	3,00 0	1,00 0	3,00 0	3,00 0	2,00 0	0,50 0	0,33 3	0,50 0	3,00 0	0,33 3	1,00 0	0,25 0	0,33 3
5	0,25 0	0,33 3	0,25 0	3,00 0	1,00 0	4,00 0	3,00 0	3,00 0	0,33 3	0,50 0	0,33 3	3,00 0	0,33 3	1,00 0	1,00 0	0,33 3

Element / Responden	G								H							
	A	B	C	D	E	F	G	H	A	B	C	D	E	F	G	H
1	0,33 3	1,00 0	0,20 0	1,00 0	0,33 3	2,00 0	1,00 0	2,00 0	0,25 0	0,33 3	0,50 0	0,50 0	1,00 0	3,00 0	0,50 0	1,00 0
2	1,00 0	0,50 0	0,25 0	1,00 0	0,33 3	1,00 0	1,00 0	0,33 3	0,50 0	0,33 3	0,50 0	0,50 0	3,00 0	4,00 0	3,00 0	1,00 0
3	0,33 3	0,33 3	0,20 0	1,00 0	0,33 3	1,00 0	1,00 0	2,00 0	0,50 0	0,50 0	1,00 0	1,00 0	3,00 0	3,00 0	0,50 0	1,00 0
4	0,25 0	0,33 3	0,20 0	1,00 0	0,33 3	0,50 0	1,00 0	2,00 0	0,33 3	0,50 0	0,33 3	0,33 3	0,50 0	3,00 0	0,50 0	1,00 0

5	0,33 3	1,00 0	0,25 0	1,00 0	0,33 3	1,00 0	1,00 0	4,00 0	0,50 0	0,50 0	0,25 0	0,33 3	3,00 0	3,00 0	0,25 0	1,00 0
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- A = land use type
- B = land ownership
- C = local wisdom
- D = migration
- E = occupation
- F = employment
- G = type of tourist
- H = accommodation

Next step, find a geometric average for every row from table above. In mathematics a equation formula as follow:

$$U = \sqrt[n]{x_1, x_2, x_3 \dots \dots x_n}$$

Find the geometric average, then make the result in matrix as below:

Table 2. Average Matrix

	A	B	C	D	E	F	G	H
A	1,000	0,230	0,210	3,180	2,170	2,550	2,550	2,290
B	4,370	1,000	0,240	3,780	3,290	2,770	1,780	2,550
C	2,510	4,180	1,000	2,350	3,370	2,550	4,570	2,170
D	0,310	0,260	0,430	1,000	0,520	0,820	1,000	1,060
E	0,460	0,400	0,270	3,370	1,000	3,570	3,000	1,430
F	0,390	0,360	0,340	2,050	0,520	1,000	0,760	0,450
G	0,390	0,560	0,220	1,000	0,330	1,000	1,000	1,610
H	0,400	0,430	0,460	0,490	1,680	3,180	0,620	1,000

Next step, the matrix above calculate with determinant a_{ij} . Result of determinant summarized by determinant matrix. This result to find multiply matrix. From multiply matrix, searching for S value or S matrix with an equation formula as below:

$$S \text{ Matrix} = m.A$$

To find a S matrix, need to calculate m value, first. Value of m is getting from a formula:

$$m = 1/100,320$$

Therefore, the S matrix can be calculated. After find S matrix, need to calculate a T matrix with the formula as below:

$$T \text{ Matrix} = (I-S)$$

The result of T matrix then inversed. Result of T inverse matrix, calculated by sum up row and column every variable as a row and column vector. Results of the row and column vector drawn by cartesius diagram. For x coordinate calculate as follows:

$$x = ri+dj$$

Based on the formula above, resulted by table as follow:

Table 3. x coordinate

r	ri	dj	ri+dj
A	0,138	0,095	0,233
B	0,201	0,086	0,287
C	0,227	0,045	0,272
D	0,053	0,020	0,073
E	0,131	0,017	0,148
F	0,058	0,150	0,208
G	0,060	0,347	0,407
H	0,081	0,570	0,651

Meanwhile, the coordinat of y could be calculate as follows:

$$y = ri - dj$$

And the results are:

Table 4. y coordinate

r	ri	dj	ri-dj
A	0,138	0,095	0,043
B	0,201	0,086	0,115
C	0,227	0,045	0,182
D	0,053	0,020	0,033
E	0,131	0,017	0,114
F	0,058	0,150	-0,092
G	0,060	0,347	-0,287
H	0,081	0,570	-0,489

For next step, sketched a cartesius diagram as modeling relationship factors of sustainable tourism in Pancasari.

3. Findings

Findings of this study are modeling relationship factors of sustainable tourism and a key factor which is affect dominately for sustainable tourism in Pancasari traditional village. The modeling relationship described by cartesius diagram. This is a result of row and column vector. The cartesius diagram as below:

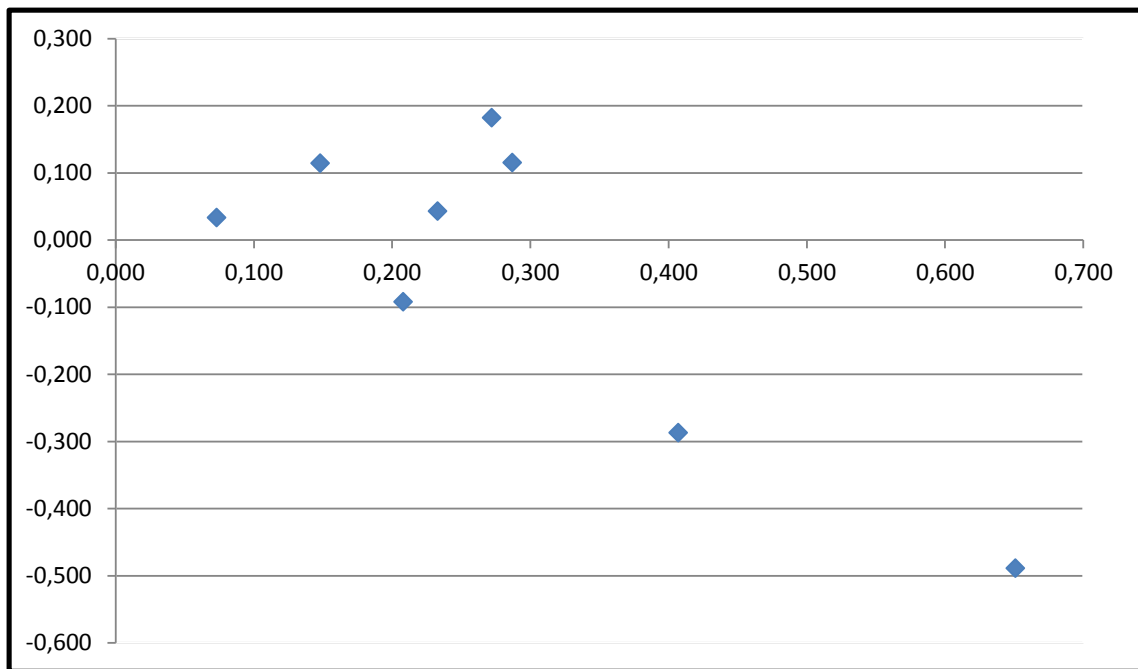


Fig. 1. Modeling relationship factors of sustainable tourism in Pancasari

Second, the findings of this study is a key factor that determinanted by relationship diagram as below:

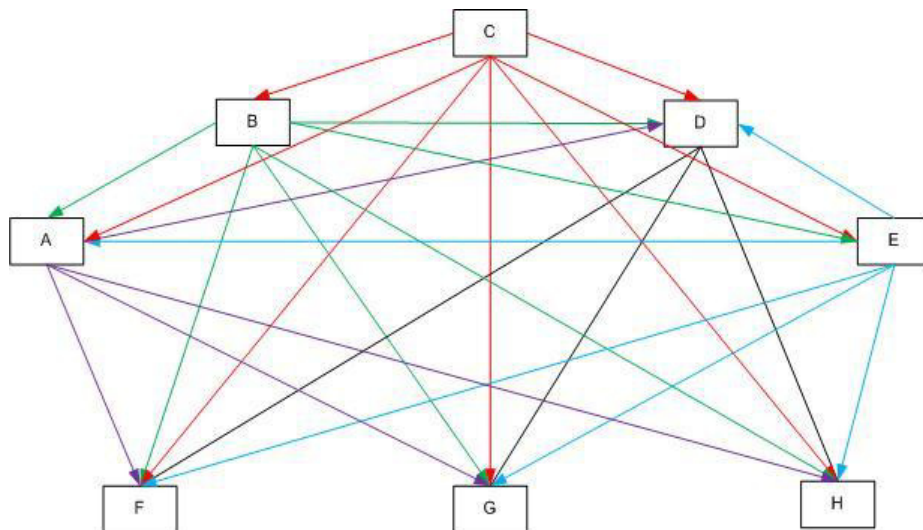


Fig. 2. Modeling relationship factors of sustainable tourism in Pancasari

4. Discussions

Diagram cartesius showed a variable has certain position which explains the magnitude of the influence and the existence of variable with another variables. If the variable is set at the point position of the coordinate axis x with highest value, then the variable is a variabel that exists more in comparison with the other. Vice verse, a variable that is set at the position x coordinate with the lowest value of x, then the variable is a variable that does not exist. That is, the existence of the variable is the weakest among the others. Then, if the y coordinate for the location of the variables are in the coordinate y value of the point most high means that the variable has a stonger influence

compared to the others. And vice versa. The coordinate points of the y is well known independent variables and the dependent variable. That includes the independent variable is the variable that can exert influence to other variables. On the diagram, which is included in the independent variable, that variable C, E, B, A, and D, i.e., local wisdom, occupation, land ownership, and use, and migration. Whereas, the dependent variable is include in the variables get influence from other variables. Included in the dependent variable is the variable F, G, and H, i.e. labour, variable characteristics of tourists, and accomodation.

The independent variable C, affecting variable that which is located below. For example the variable local wisdom that special provisions area affecting land use area in the village of Pancasari. Similarly, with the second highest y value variables will give effect to the present variables below. The influence between the dependent variable to the independent variables can be summarized as follows:

- Variable C affecting variables B, E, A, D, F, G, G, and H.
- Variable B affecting variables E, A, D, F, G, and H.
- Variable E affecting variables A, D, F, G, and H.
- Variable A affecting variables D, F, G, and H.
- Variable D affecting variables F, G, and H.

5. Conclusions

The results of this research it can be conclude that, the variable H cartesius i.e. accommodation is of the highest value of x, while the variable D is the lowest value of x is migration. That means, variable is the variable that most accomodations exist among others. The C variable is local wisdom is the highest value of variable y which means that local wisdom has the most powerful influence among other variables. Local wisdom became the most dominant variables that affect the sustainability of the village of Pancasari as rural tourist destinations.

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